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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,165	08/08/2003	Marc Tremblay	SUN-P9324	2937
57960 7590 11/24/2008 PVF -- SUN MICROSYSTEMS INC. C/O PARK, VAUGHAN & FLEMING LLP 2820 FIFTH STREET DAVIS, CA 95618-7759				
EXAMINER				
ZHE, MENG YAO				
ART UNIT		PAPER NUMBER		
2195				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/637,165

Applicant(s)

TREMBLAY ET AL.

Examiner

MENG YAO ZHE

Art Unit

2195

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-11, 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/92)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-2, 4-11, 13-20 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 10, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herlihy et al., Patent No. 5,428,761 (hereafter Herlihy) in view of Callander et al., Patent No. 5,226,150 (hereafter Callander).

4. As per claims 1, 10, and 19, Herlihy teaches the invention as claimed including a method for executing a commit instruction to facilitate transactional execution on a processor, comprising:

Upon encountering the commit instruction, successfully completing transactional execution of the block of instructions preceding the commit instruction, wherein successfully completing the transactional execution involves atomically committing changes made during the transactional execution by (Column 7, lines 25-58; Column 9, line 55):

Treating store-marked cache lines as locked, thereby causing other processes to wait to access the store-marked cache lines (Column 6, lines 34-40; Column 8, lines 4-8; Column 10, line 68-Column 11, line 5; Column 11, lines 52-54);

Committing store buffer entries generated during transactional execution to memory, wherein committing each store buffer entry involves removing the store-mark from, and thereby unlocking, a corresponding store-marked cache line (Column 6, lines 53-68);

Committing register file changes made during transactional execution;

wherein changes made during the transactional execution are not committed to the architectural state of the processor until the transactional execution successfully completes. (*Column 8, lines 1-8*).

Herlihy further teaches a dirty bit, which corresponds to the load-marks, for cache lines and a write-back at the commit instruction. However, Herlihy does not specifically teach clearing the load-marks after the write-back.

However, clearing the dirty bit after write-back is commonly practiced as part of cache protocol at the time of the applicant's invention, as further specifically shown in the teachings of Callander, for the purpose of cache coherency (Column 7, lines 15-22).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to combine the teachings of Herlihy with the specifics, commonly practiced procedure of clearing the load mark after write-back, as taught by Callander, because it allows for cache coherency.

5. Claims 2, 4-7, 9, 11, 13-16, 18, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herlihy et al., Patent No. 5,428,761 (hereafter Herlihy) in view of Callander et al., Patent No. 5,226,150 (hereafter Callander) further in view of Rajwar et al. Patent No. 7,120,762, 10/10/2006, (hereafter Rajwar).
6. Rajwar was cited in the previous office action.
7. As per claims 2, 11, 20, Herlihy in view of Callander does not specifically teach wherein successfully completing the transactional execution involves atomically committing changes made during the transactional execution; and resuming normal non-transactional execution..

However, Rajwar teaches wherein successfully completing the transactional execution involves atomically committing changes made during the transactional execution; and resuming normal non-transactional execution for the purpose of continuing execution. (*Column 3, lines 15-17; Column 5, lines 57-60; Column 9, lines 45-50*)

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Herlihy in view of Callander with wherein successfully completing the transactional execution involves atomically committing changes made during the transactional execution; and resuming normal non-transactional execution, as taught by Rajwar, because it allows for the program to continue executing.

8. As per claims 4, 13, Rajwar teaches
wherein if an interfering data access from another process is encountered during the transactional execution and prior to encountering the commit instruction, the method further comprises: discarding changes made during the transactional execution; and attempting to re-execute the block of instructions. (*Column 8, lines 50-65*)
9. As per claims 5, 14, Rajwar teaches
wherein for a variation of the commit instruction, successfully completing the transactional execution involves: atomically committing changes made during the transactional execution; and commencing transactional execution of the block of instructions following the commit instruction. (*Abstract and Column 9, lines 45-50, Column 3, line 15-17*)
10. As per claims 6, 15, Rajwar teaches
wherein potentially interfering data accesses from other processes are allowed to proceed during the transactional execution of the block of instructions. (*Column 2, lines 47-50*)
11. As per claims 7, 16, Rajwar teaches wherein the block of instructions to be executed transactionally comprises a critical section (*Column 2, lines 47-50*)

12. As per claims 9, 18, Rajwar teaches wherein the commit instruction is defined in a platform-independent programming language (*Column 10, lines 8-15*)

13. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herlihy et al., Patent No. 5,428,761 (hereafter Herlihy) in view of Callander et al., Patent No. 5,226,150 (hereafter Callander) further in view of Rajwar et al. Patent No. 7,120,762, 10/10/2006, (hereafter Rajwar) further in view of Hecht et al, Pub. No. US 2003/0064808 (hereafter Hecht).

14. Hecht was cited in the last office action.

15. As per claims 8, 17, Rajwar teaches that the invention as he disclosed may be used on different computer architecture, meaning that they can be platform independent (*Column 10, lines 8-15*)

Rajwar does not teach the commit instruction being platform dependent.
However, Hecht teaches a
converter program that converts platform independent programs into platform dependent programs for the purpose of running the program on a specific type of machine (*Paragraph 14*)

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the invention of Rajwar with

Converting the platform independent instruction to platform dependent instruction,
as taught by Hecht, because it allows the program to run on a specific type of machine.

Response to Arguments

16. Applicant's arguments with respect to claims 1-2, 4-11, 13-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MENGYAO ZHE whose telephone number is (571)272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195

